



EDUCATION

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DUAL EDUCATION: APPLICATION OF GERMANY'S POSITIVE EXPERIENCE IN UKRAINIAN REALITY

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This article deals with the functioning of the dual system of education in Germany and ways of its practical implementation in Ukraine. The condition of pedagogical education at this stage is analysed. A review of sources and scientific views on the existence of dual education as a link in vocational education, which ensures the successful professional implementation of future professionals, was conducted. The dual system of education is defined as one that combines theoretical training in vocational school and practical training at the enterprise. Considerable attention is paid to the analysis of the structure of dual education, its content and process. This article identifies the primary documents that are the legal basis for the introduction of dual education both in Germany and Ukraine. It is noted that the financing of the dual system in Germany is implemented in two ways: vocational school is funded from the federal budget, while enterprises finance industrial training; in Ukraine funding is realised from state and local budgets. The article describes the main features of vocational schools and enterprises as the main partners in the dual system of education in Germany and Ukraine, lists the names of professions acquired within dual education, tasks and positive aspects of dual education. It is emphasised that dual education creates the conditions for engaging enterprises into the training process; in particular, the high costs are involved in training professionals. In terms of the research, it is determined that the pedagogical process, which is carried out within dual education, is meant to realise three interrelated functions: educational, instructional and developmental. One of the main benefits of receiving professional



education at enterprises is the fact that young people acquire skills for its further application in practice. Thus, the authors point out the effectiveness of the German experience in vocational education in Ukraine, the need to spread the dual form of education in vocational education institutions in Ukraine and note specific tips to improve some of the negative aspects of the existence of dual education.

Key words: vocational education, vocational school, dual education, training at the enterprise, future specialists, dual education in Germany, dual education in Ukraine.

У цій статті розглядаються питання функціонування дуальної освіти в Німеччині та шляхи її ефективного запровадження в Україні. Проаналізовано стан педагогічної освіти на даному етапі. Здійснено огляд джерел та наукових поглядів на існування дуальної освіти як ланки професійної освіти, яка забезпечує успішну професійну реалізацію майбутніх спеціалістів. Значна увага приділяється огляду структури дуальної освіти, її змісту і процесу. Ця стаття визначає основні документи, які є правовою основою для запровадження дуальної освіти в Німеччині та Україні. У статті проаналізовано основні характерні риси професійного училища та підприємства як основних партнерів у рамках дуальної системи навчання в Німеччині та Україні; перелічено назви професій, які здобуваються в межах дуальної освіти, завдання та позитивні аспекти дуальної освіти. У процесі дослідження було визначено, що педагогічний процес, який здійснюється у межах дуальної освіти, покликаний реалізувати три взаємопов'язаних функцій: освітню, навчальну та розвиваючу. Автори вказують на ефективність застосування досвіду Німеччини у професійній освіті України, необхідність поширення дуальної форми навчання у професійних закладах освіти України та зазначають певні поради для покращення деяких негативних моментів існування дуальної освіти.

Ключові слова: професійна освіта, професійне училище, дуальна освіта, навчання на підприємстві, майбутні спеціалісти, дуальна освіта в Німеччині, дуальна освіта в Україні.

Introduction. Professional education plays an essential role in the development of the country's economy as it trains specialists of different professions, required by society. Every country has its system of professional education, each differing in the types of universities and vocational schools, the duration of teaching, the degrees offered, and the possibility of continuing education at the next level. Germany is one of the European countries, whose system of professional education has highly recommended itself in the whole world. Therefore, many countries try to use its experience, especially in the sphere of dual education.

Although the system of dual education and its benefits to the EU countries and the USA are described in detail in many publications by not only foreign but also Ukrainian scientists, dual education integration into the Ukrainian education system is poorly studied. Approaches to the organisation of dual education in Germany, the rights and responsibilities of the parties, the need to maintain constant contact between



a student, an educational institution and an employer, essential requirements to the design of dual programs and the organisation of the educational process based on the example of German Universities have been analysed by some scientists (Göhringer, A., Hofstetter, H., Horn, A., Jang, S. T., Kasymova, A., Mill, U., Muhambetaliev, S., Pätzold, H., Reinert, L., Xu, M. and others). Practical application of the dual model in the higher professional education of adults in European countries as well as about the Ukrainian experience of organisational and pedagogical support for the implementation of dual education model elements into the system of higher education in Ukraine have been described in some works (Davlikanova, O., Dernova, M., Kuppenko, O., Svitailo, N. and others).

Methodology. The paper uses qualitative and comparative analysis in order to gain insights into peculiar features of dual education development in Germany and Ukraine. We also used theoretical research methods, such as critical analysis of academic and pedagogical studies connected with the topic of this research and content analysis of research materials.

Results and discussion. The terms "dualism", "dual", "duality" (from Latin "dualis" – double) are widely used in various fields of knowledge (philosophy, political science, economics, social and natural sciences). In pedagogy, the term "dual system" was first used in Germany in the middle 1960s to refer to a new form of vocational training organisation, which later spread to other German-speaking countries (Austria, Switzerland, etc.). According to the definition of the German Committee for Education and Training, the dual system is "a system of simultaneous learning at the enterprise and in vocational school". According to UNESCO's International Standard Education Qualifications, the dual system may be interpreted as organised educational programs for young people that combine part-time employment with part-time studies in traditional or higher education (UNESCO, 2006)

Thus, dual education is defined as one that combines training in vocational school and at the enterprise. Within the dual system, students take practical training directly at the enterprise (that is 3–4 days a week), and theoretical training (1–2 days in a vocational school). The connection between the enterprise and vocational school in the dual education system is given in the diagram (see Fig.1):

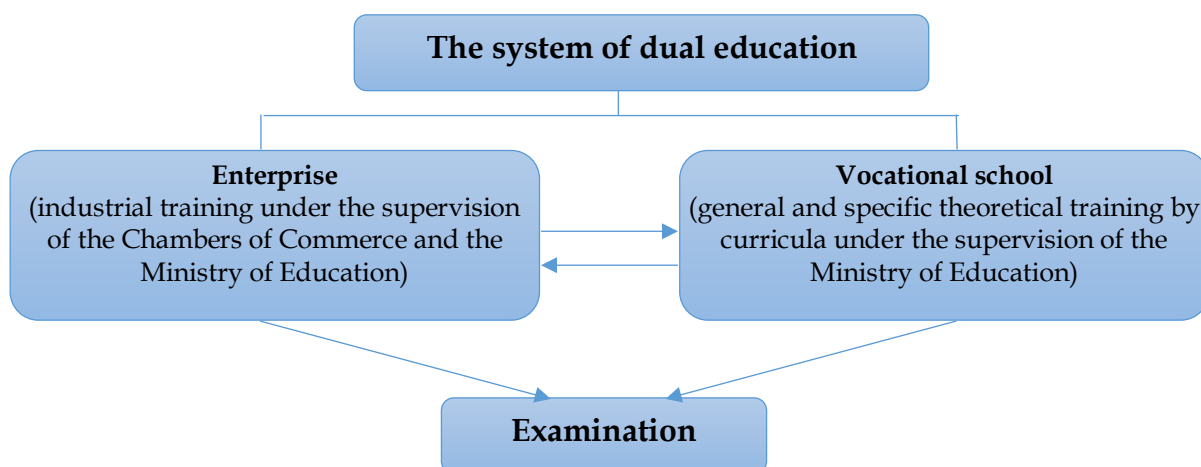


Fig. 1. The connection between business and vocational school within the dual system



The legal basis for the implementation of dual education in Germany is the law on vocational education, approved on August 14, 1969. Before the adoption of this law, dual education was governed by the laws on trade, crafts, industry and chambers of commerce (Lipsmeier, 1998, p. 54). The basis for the introduction of dual training elements in Ukraine is the Law of Ukraine "On Education", the Order of the Cabinet of Ministers of Ukraine of September 19, 2018, No. 660-p "On Approval of the Framework of Specialists' Training in the Dual Form of Education" (Cabinet of Ministers of Ukraine, 2018). The Conception is based on the German experience of the dual form of education, which was presented, in particular, through the Representation of the Friedrich Ebert Foundation, the German-Ukrainian Agrarian Policy Dialogue, the Eastern Partnership Project "Dual Education in Dialogue" with the participation of educational institutions. In Ukraine, the cooperation of employers and some higher educational institutions training specialists for the production and agrarian sector was preserved after 1991. It is also well developed in IT. However, the term "dual education" ("dual form of education") was first defined at the legislative level in the Law of Ukraine No. 2145-VIII "On Education", adopted by the Verkhovna Rada of Ukraine on September 5, 2017 (Zakon Ukrainy "Pro Osvitu", 2017; Davlikanova&Rayter, 2017).

Financing of the dual system in Germany is realised in two ways: the federal budget funds the vocational school, and industrial training is funded by the enterprise's owner. The state controls the theoretical part of vocational training, that is training in vocational schools, and chambers of commerce and industry control industrial training. Private capital, not the state, plays the leading role in the workers training. That enables young people from the working class of the population to receive only restricted professional training (people under the age of 18 can study only one profession). The Conception in Ukraine is implemented at the expense of state and local budgets and other sources which are not prohibited by the law. The amount of financial, human resources and facilities required for the implementation of the Conception is determined annually, taking into account the possibilities of state and local budgets, the amount of international technical assistance involved, in particular in the framework of the implementation of the European Union project "EU4Skills" (Cabinet of Ministers of Ukraine, 2018).

The main characteristics of the vocational school and the enterprise as partners within the dual vocational training system for youth both in Ukraine and Germany can be summarised in table 1:

Table 1

**Vocational school and enterprise as partners
within the dual system of youth vocational training**

Vocational school	The enterprise
<ul style="list-style-type: none"> • Theoretical training organised by the state. • Teachers provide training. • Training in the form of classes. 	<ul style="list-style-type: none"> • Practical training organised by private companies. • Skilled workers provide training. • Training in the form of employment and work.



Continuation table 1

<ul style="list-style-type: none"> • Provides professional, theoretical and general knowledge. • The basis is the curricula of federated states (in Germany) and the curricula of the state (in Ukraine). 	<ul style="list-style-type: none"> • Provides professional knowledge. • The basis is a framework curriculum.
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As a rule, training within the dual system begins with the “Contract on industrial training” between the future student and the enterprise’s owner, which defines: the purpose of training, type of work after graduation, the method and content of training, beginning and duration of the training, extracurricular activities, duration of the workday, the length of probation, the amount and timing of payment, the length of vacation, the conditions under which the contract may be terminated. In Ukraine, the specialists of the Ministry of Education and Science with stakeholders created the Regulations on the dual form of vocational and higher professional education. A standard contract between the employer, the institution’s administration and the student has also been approved by the end of 2019.

A large number of German youth (about 70% of graduates) acquire one of 350 state-licensed professions after leaving school within the dual system. There is a list of technical specialities within the dual education system, recognised by the state. They include the following: 1) toolmaker; 2) mining technologist; 3) electrician of construction and infrastructure systems; 4) mining engineer; 5) mechanic of building structures; 6) woodworking mechanic; 7) mechanic of air conditioners; 8) mechanic of construction; 9) aircraft mechanic; 10) motorcycle mechanic; 11) industrial mechanic; 12) mechanic of agricultural machinery; 13) mechanic of technical devices; 14) industrial electrician; 15) system engineer; 16) system mechanic; 17) locksmith; 18) technical designer; 19) production technologist; 20) packing technologist; 21) specialist of road and transport equipment; 22) electronics specialist; 23) specialist of mechanical equipment; 24) miller (Bundesinstitut für Berufsbildung, 2018).

During 2015-2017, an experiment was carried out on the organisation of the educational and production process with elements of the dual form of education based on the Higher Vocational School №33 in Kyiv (profession "Cook"), Higher Vocational Art School in Lviv (profession “Painter”), Higher Vocational School of Mechanical Engineering, Zaporizhia (profession “Turner”). The first graduation of three experimental groups took place, which showed positive results of the introduction of dual form elements: high level of employment – up to 97%, improvement of professional training quality by 12-17%, additional financial income – up to 50 thousand hryvnias in each vocational school, reduction of expenses for utilities and consumables, more stable and mutually beneficial cooperation with employers (Ministry of Education and Science of Ukraine, n. d.). During 2018-2020 524 educational institutions were introducing a dual form of training including 507 occupations in Ukraine. The number of enterprises involved in the implementation of the dual form of training comprised 810 in 2018 and 837 in 2019 (Miroshnychenko, n. d.).



There is no doubt that the dual education creates the conditions for engaging enterprises into the training process; in particular, the high costs are involved in training professionals. In such a way, businesses become interested not only in the learning process but also in its content and organisation. It is the importance of the dual system as a model for the vocational education organisation, which allows overcoming inconsistencies between the industrial and educational spheres in the process of training (Bundesministerium für Bildung und Forschung, 1998, p. 191). Each year, businesses conclude about half a million of treaties on vocational education and invest up to € 28 billion in the industry. Besides, they participate in various projects related to secondary vocational education. Enterprises cover all costs associated with the industrial training, pay cash rewards to students, have all the necessary training equipment for specific professions, and provide common knowledge (Pätzold, 2006, p. 7). According to G. Braun, the Vice President of the Federal Association of the German Employers' Union (Bundesvereinigung der Deutschen Arbeitgeberverbände), more than 24,000 German businesses cooperate with higher education institutions within dual education. Business representatives are involved in the work of HEI accreditation committees to test the quality of education and provide practical advice on improving educational services (Braun, 2009, p. 602).

The content and process of training in a vocational school for a particular profession in Germany is adjusted by the Vocational Education Instructions, which are developed by the Federal Institute for Vocational Education and approved by the relevant Ministry. The Instructions serve as recommendations and include the name of the speciality; duration of training; speciality profile (a list of skills and competencies that a student should master); approximate curriculum; the content and procedure of the exams. Control of industrial training, examination and assignment of work qualification are carried out by chambers of commerce and industry that register industrial training contracts and are obliged to determine whether the enterprise has the personnel and conditions that provide full training.

As we mentioned previously, the content and process of training in Ukrainian vocational schools is adjusted by the Law of Ukraine "On Vocational Education". In particular, Article 25 describes the forms of educational process organisation. Article 26 defines the control of knowledge, skills and abilities of students, their qualification certification. Article 27 characterises students' educational and vacation time. Article 29 defines participation of enterprises, institutions, and organisations in the of vocational education provision (Zakon Ukrainy "Pro Osvitu", 2017).

As a state educational institution for the dual training of technical profile specialists, the vocational school has the same tasks both in Germany and Ukraine. They are: to deepen and systematise the professional knowledge acquired at the enterprises, to acquaint students with the theoretical foundations of the profession, to expand specialists' education and training. The purpose of the vocational school is a versatile, harmonious development and professional socialisation of technical profile specialists, as well as the transfer of knowledge and skills necessary for professional activity, so the pedagogical process is intended to perform three main interrelated functions, that is educational, instructional and developmental.



The educational function of the pedagogical process lies in the formation of specialists in the system of scientific, technical, technological and industrial knowledge; developing their ability to apply the acquired knowledge to solve educational and industrial problems; consolidation, improvement, expansion and deepening of the acquired knowledge, abilities and skills. The implementation of this function is the basis of the pedagogical process and determines the success of other functions. The instructional function is in the fact that learning continually brings up the learners. The teacher's, master's and tutor's main task is to maximise the use of the socialisation possibilities of the pedagogical process for the best qualities formation of the future technical profile specialists. During the pedagogical process, several qualities are formed by future specialists. They include the basis of the scientific outlook, professional beliefs, high moral qualities, norms and rules of civic behaviour, respect for work, readiness for social communication, labour discipline, integrity, responsibility. As a result of dual education, the technical profile specialists should obtain a wide range of theoretical knowledge, practical and technical skills as well as to acquire skills and ability to stand up for their interests and improve working conditions.

The dual vocational training system is continuously being improved through new technical professions, as well as due to the revision of vocational training regulations for existing professions. In 1999, modernisation was carried out, resulting in the creation of 24 professions, while 76 professions were updated, and the procedure for passing examinations at industrial chambers was simplified. This modernisation aims to achieve a consistent improvement of the situation on the labour market and to offer all willing young people to receive vocational education. "Education for everybody" - that is the motto of German vocational education (Lipsmeier, 1998, p. 4). Since August 1, 2003, the following technical specialities have been modernised: electronics specialist, mechanic of technical devices, mechanic of agricultural machinery. New professions in the field of information technology and media have appeared, and the conditions for vocational training have significantly improved. By these changes, the legislative "Regulations on the organisation of vocational education" are also subject to updating and bringing in line with established standards, which is a condition for formal recognition of the qualifications acquired by students. Depending on the profession, the training lasts from 2 to 3,5 years. Training in a vocational school is within the competence of the relevant federated state, training at the enterprise is within the competence of the federation and is carried out in conditions that meet all modern requirements: on modern machines and equipment (Lipsmeier, 1998, p. 18).

In 2007, about 65% of young people in Germany were in a dual training system after leaving school. It should be noted that in Germany, unlike in Ukraine, short-term training (up to 6-8 months) in order to obtain a profession (qualification) is not widespread. It indicates exceptionally high requirements for the level of knowledge, skills and abilities of professionals who have completed vocational training. Employers' associations and commercial chambers have a significant influence on the organisation and content of education of the specialists they provide training for (Kai, 2003, p. 526).



In order to ensure that students are trained with the appropriate skills, knowledge and attitudes, vocational schools need to monitor the quality of graduates' performance. Such activities are the primary mechanism that allows confirming that the graduates of a particular educational institution have received sufficient training that meets the needs of the industry (Serheieva, 2008, p. 1). The quality of workers' training within the dual system of education is closely related to the teaching staff (teachers, educators, masters), who must have good knowledge not only in the subject but also must be professionally fit, able to arouse students' interest in improving professional skills in the chosen profession during all working life. To do this, by current requirements, they study and systematically improve their skills in special schools and courses.

Receiving professional education at enterprises, young people acquire skills for their further application in practice. It contributes to the professional socialisation of specialists who are learning to maintain their position in the workplace. Enterprises also benefit from the system of dual training by the fact that after graduation, workers can be immediately involved in the production, i.e. there is no need for a long-term introduction to the job. Along with the traditional dual system of vocational education, new ways of obtaining qualifications are emerging: for example, companies hire gymnasium graduates as interns or look for university graduates with a bachelor's degree to replace the positions that could be applied for by people, who have been trained in terms of dual vocational education (Schuldt-Baumgart, 2007, p. 17). The Federal Labor Agency (Bundesagentur für Arbeit) and the advisory services (Berufsberaterinnen und Berufsberater) at the Federal Labor Agency are successfully operating in Germany to inform young people about available vacancies, job search assistance and employment.

Analysis of the German experience allows us to note the positive aspects of dual education. They may be divided into socio-economic, socio-political and educational (Fig.2).

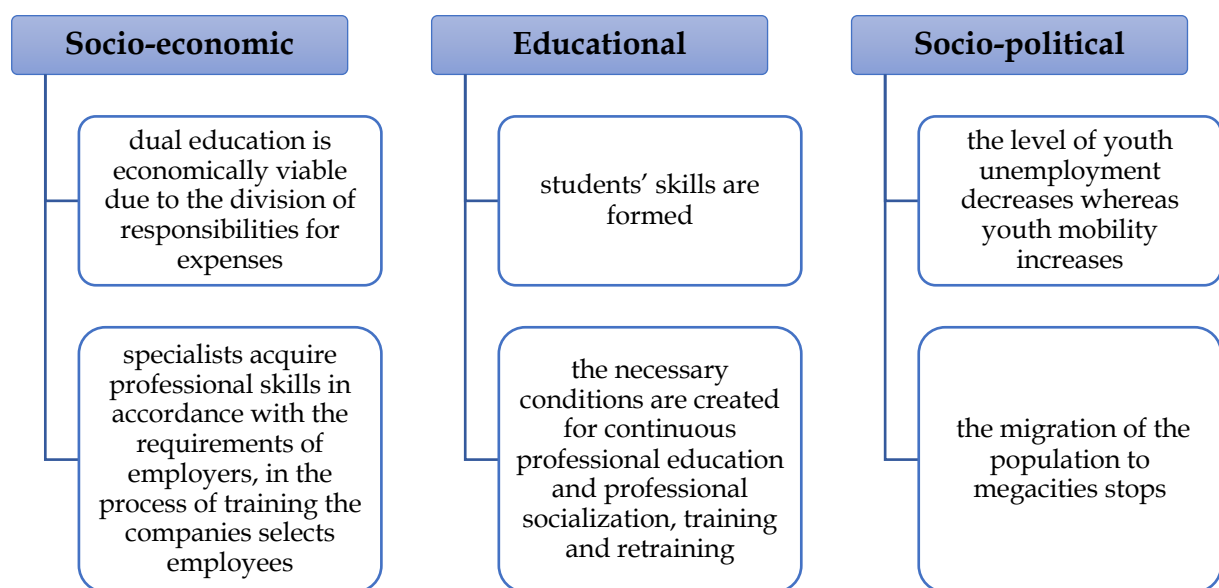


Fig. 2. Positive aspects of dual education in Germany



The analysis of Ukrainian vocational education institutions activity on the introduction of elements of the dual form of education showed that such a system allows companies to plan for the replacement of labour resources and select the best students as during training one can identify their strengths and weaknesses. Besides, young workers quickly adapt to the work rhythm of production, acquire stable professional techniques, work skills and independence, they have confidence in the future. Researchers also point at the main changes that have happened in the organisation of the training and production process after the introduction of elements of the dual form of learning in Ukraine. They are as follows:

- change in the ratio of study time: theoretical training – 30%, industrial training and industrial practice – 70% of training hours;
- introduction of block-modular construction of the educational process: mastering the basic module based on an educational institution, and then alternation: theory module (1-2 weeks) based on a vocational education institution/practice module (4-8 weeks) based on enterprises, institutions, organisations;
- learning outcomes evaluation – following the real indicators of vocational training, confirmed in the conditions of production.

Although German researchers note certain drawbacks of the dual system, they do not underestimate its importance. These drawbacks are almost the same both in Germany and Ukraine and include the facts that at many enterprises, curricula and programs are partially implemented, and students acquire only some of the skills and abilities that are provided by the instruction, training workshops are not always used for their intended purpose, curricula and programs of vocational schools are not consistent with the content of education, sometimes entrepreneurs do not want to create specific jobs and training workshops for students. Therefore, Ukrainian and German experts of professional education propose several steps to improve some negative moments. Firstly, it is suggested to introduce a training mechanism for those professions that are relevant today in the labour market. Secondly, it is advised to involve business in professionals' training in the framework of dual education, that is the internship can be held at a particular company directly in the chosen profession. Moreover, it is proposed to optimise costs, so that vocational education should be responsible only for training in the chosen field, while compulsory education is held in the profession-oriented school.

Conclusion. Thus, given the above, we can state that the dual system is an essential part of the education system, which prepares competitive professionals and serves as a transitional stage to higher education for technical professionals both in Ukraine and Germany. The dual form of education is a promising form of cooperation between vocational education institutions, social partners, business and resources to meet the needs of the regional and national labour market, which is an essential prerequisite for the economic development of the country. Differentiated and individualised education, the availability of professionally-oriented subjects, professional consultants, psychologists and tutors at the level of secondary schools are the factors that contribute to the professional socialisation and qualification of technical specialists in Germany and are successfully implemented in Ukraine.



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